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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,083	01/18/2006	Tomoyuki Nishimoto	NISHIMOTO 8	5587
1444 7590 08/22/2007 BROWDY AND NEIMARK, P.L.L.C. 624 NINTH STREET, NW SUITE 300 WASHINGTON, DC 20001-5303			EXAMINER LAU, JONATHAN S	
			ART UNIT 1609	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/565,083

Applicant(s)

NISHIMOTO ET AL.

Examiner

Jonathan S. Lau

Art Unit

1609

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_.

Art Unit: 1609

### **DETAILED ACTION**

This application is the national stage entry of PCT/JP04/10225, filed July 16, 2004, and claims benefit of foreign priority document JP2003-276632, filed July 18, 2003. Claims 1-11 and 13-15 are pending in this application and examined on the merits herein.

#### ***Information Disclosure Statement***

The listing of references in the Search Report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a separate paper." Therefore, the references cited in the Search Report have not been considered. Applicant is advised that the date of submission of any item of information or any missing element(s) will be the date of submission for purposes of determining

Art Unit: 1609

compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

### ***Specification***

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

The specification is objected to because as recited above, "Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading." In the instant application the section headings appear to be in bold and underlined type.

The disclosure is objected to because of the following informalities: Spelling and grammatical errors, such as:

Page 1, line 25: "no deterioration of substance comprising amino acid,"

Page 1, line 27 to page 2, line 1: "as been expected its uses in a various fields"

Page 2, line 3: "Researches about the functions of  $\alpha,\alpha$ -trehalose are now being in progress."

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 4 and 5 rejected under 35 U.S.C. 102(b) as being anticipated by Kubota et al. in WIPO publication WO/2001/090338, cited in PTO-892, published November 29, 2001, more than one year prior to the July 16, 2004 date of application for patent in the United States of the instant application. As this document was published in Japanese, Kubota et al. (US patent US 7,192,746, cited in PTO-892), the US patent issued from

Art Unit: 1609

the national stage of the PCT application published as WIPO publication

WO/2001/090338, is submitted as an English translation of WIPO publication

WO/2001/090338. Hereafter citations of Kubota et al. will refer to column and line numbers in US patent US 7,192,746.

Instant claim 4 discloses a method of forming 3- $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose comprising allowing  $\alpha$ -isomaltosyl-transferring enzyme to act on an aqueous solution comprising  $\alpha,\alpha$ -trehalose and a saccharide having a glucose polymerization degree of 3 or higher and bearing both the  $\alpha$ -1,6 glucosidic linkage as a linkage at the non-reducing end and the  $\alpha$ -1,4 glucosidic linkage other than the linkage at the non-reducing end. In Kubota et al. a solution of  $\alpha,\alpha$ -trehalose admixed with a solution of an  $\alpha$ -isomaltosyl-transferring enzyme and the saccharide panose is specifically disclosed. See Kubota et al. column 44, lines 25-67 and column 45, table 18, entry  $\alpha,\alpha$ -trehalose. Panose is a trisaccharide having the formula:  $\alpha$ -D-glucose-[1 $\rightarrow$ 6]- $\alpha$ -D-glucose-[1 $\rightarrow$ 4]- $\alpha$ -D-glucose, where the " $\alpha$ -D-glucose-[1 $\rightarrow$ 6]" signifies an  $\alpha$ -1,6 glucosidic linkage and the " $\alpha$ -D-glucose-[1 $\rightarrow$ 4]" signifies an  $\alpha$ -1,4 glucosidic linkage, and is disclosed in the specification of the instant application as said saccharide in Experiment 2 on page 24, line 7. Therefore instant claim 4 is anticipated by Kubota et al.

Instant claim 5 recites "the method of claim 4, wherein said saccharide is prepared by allowing  $\alpha$ -isomaltosylglucosaccharide-forming enzyme to act on partial starch hydrolyzates." Kubota et al. teaches the reaction wherein said saccharide is

Art Unit: 1609

prepared by allowing  $\alpha$ -isomaltosylglucosaccharide-forming enzyme to act on panose.

See Kubota et al. column 44, line 25. JOHN DENAULT LEO et al. (US patent US 3,378,462, cited in PTO-892) teaches that panose is a product of partially hydrolyzed starch, a partial starch hydrolyzate. See JOHN DENAULT LEO et al. column 1, lines 12-18. Therefore instant claim 5 is anticipated by Kubota et al.

***Claim Rejections - 35 USC § 102/103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

Art Unit: 1609

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 7- 9, 11, 13, and 14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kubota et al. in WIPO publication WO/2001/090338, cited in PTO-892. As this document was published in Japanese, Kubota et al. (US patent US 7,192,746, cited in PTO-892), the US patent issued from the national stage of the PCT application published as WIPO publication WO/2001/090338, is submitted as an English translation of WIPO publication WO/2001/090338. Hereafter citations of Kubota et al. will refer to column and line numbers in US patent US 7,192,746.

Instant claim 2 claims 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, a specific embodiment of the generic claim of instant claim 1. The specification of the instant application discloses the compound 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, also referred to as transferred saccharide A, produced in Experiment 2 on page 24. The reaction conditions in Experiment 2 of the instant application are the same as the reaction conditions disclosed in Kubota et al. column 44, lines 25-67. The specific  $\alpha$ -isomaltosyl-transferring enzyme disclosed by applicant in the specification of the instant application, for example on page 7, lines 18-20, are the same as the enzymes disclosed by Kubota et al. column 44, lines 29-37. Kubota et al. disclose a product formed resulting from the transferring reaction between panose and  $\alpha,\alpha$ -trehalose and analyzed by HPLC in



Art Unit: 1609

column 44, lines 42-50. However, Kubota et al. do not specifically disclose the identity of this product. It is anticipated or would be obvious to one of ordinary skill in the art at the time of invention that the same product is produced by treating the same starting material with the same reaction conditions. Therefore instant claims 1 and 2 are anticipated by or obvious over Kubota et al.

Instant claim 7 recites "a method of forming  $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose, which comprises the step of allowing a saccharide-transferring enzyme to act on an aqueous solution comprising 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose represented by the chemical formula 2 and/or 3- $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose represented by the chemical formula 3 and optional other saccharides to form said  $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose of claim 1." Kubota et al. disclose the reaction of  $\alpha$ -isomaltosyl-transferring enzyme, which is a saccharide-transferring enzyme, with  $\alpha,\alpha$ -trehalose in the presence of panose, both saccharides other than 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose. See Kubota et al. column 44, lines 25-67. As stated above, it is anticipated or obvious that this reaction produces 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose. Therefore the reaction mixture contains a saccharide-transferring enzyme acting on 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose and other saccharides to form an  $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose, namely 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose. Therefore instant claim 7 is anticipated by or obvious over Kubota et al.

Instant claim 8 recites "a process which comprises the steps of: allowing  $\alpha$ -isomaltosyl-transferring enzyme to act on an aqueous solution comprising  $\alpha,\alpha$ -trehalose

Art Unit: 1609

and a saccharide having a glucose polymerization degree of 3 or higher and bearing both the  $\alpha$ -1,6 glucosidic linkage as a linkage at the non-reducing end and the  $\alpha$ -1,4 glucosidic linkage other than the linkage at the non-reducing end to form 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose represented by the chemical formula 2; and collecting the resulting 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose." The instant claim 8 is similar to instant claim 1 except for reciting the formation and collecting of 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose. As stated above, the same reaction conditions to generate the same product are disclosed by Kubota et al column 44, lines 25-67. Broadly interpreted, collecting 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose means "to bring together into one body or place" such as in the reaction vessel, the sample for HPLC analysis, or even as the HPLC analyte. It does not introduce any limitation such as isolating or purifying the product. Kubota et al. discloses analysis of the reaction product by HPLC. See Kubota et al. column 44, lines 42-50. Therefore instant claim 8 is anticipated by or obvious over Kubota et al.

Instant claim 9 recites "the process of claim 8, wherein said saccharide is prepared by allowing  $\alpha$ -isomaltosylglucosaccharide-forming enzyme to act on starchy substances." The specification of the instant application discloses "starch or partial starch hydrolyzate (abbreviated as "starchy substance", hereinafter)". See page 2, lines 22-24. As stated above, the same reaction conditions to generate the same product are disclosed by Kubota et al. Broadly interpreted, collecting 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose means "to bring together into one body or place" such as in the reaction vessel, the sample for HPLC analysis, or even as the HPLC analyte. It does not introduce any

Art Unit: 1609

limitation such as isolating or purifying the product. Kubota et al. discloses analysis of the reaction product by HPLC. See Kubota et al. column 44, lines 42-50. Kubota et al. discloses the reaction wherein said saccharide is prepared by allowing  $\alpha$ -isomaltosylglucosaccharide-forming enzyme to act on panose. See Kubota et al. column 44, line 25. JOHN DENAULT LEO et al. (US patent US 3,378,462, cited in PTO-892) discloses that panose is a product of partially hydrolyzed starch, a partial starch hydrolyzate. See JOHN DENAULT LEO et al. column 1, lines 12-18. Therefore instant claim 9 is anticipated by or obvious over Kubota et al.

Instant claim 11 recites "a process of forming  $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose, which comprises the step of allowing a saccharide-transferring enzyme to act on an aqueous solution comprising 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose represented by the chemical formula 2 and/or 3- $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose represented by the chemical formula 3 and optional other saccharides to form said  $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose of claim 1; and collecting the resulting  $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose." The instant claim 11 is similar to instant claim 7 except for reciting the collecting of 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose. As stated above, the same reaction conditions to generate the same product are disclosed by Kubota et al. Broadly interpreted, collecting 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose means "to bring together into one body or place" such as in the reaction vessel, the sample for HPLC analysis, or even as the HPLC analyte. It does not introduce any limitation such as isolating or purifying the product. Kubota et al. discloses analysis of the reaction product by HPLC.

See Kubota et al. column 44, lines 42-50. Therefore instant claim 11 is anticipated by or obvious over Kubota et al.

Instant claim 13 recites "A composition which comprises  $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose of claim 1." Broadly interpreted, a composition may include a reaction mixture, the sample for HPLC analysis, or even as the HPLC analyte. Kubota et al., Kubota et al. column 44, lines 42-50, disclose a product formed resulting from the same reaction conditions as disclosed in Experiment 2 of the instant application and analysis of that product by HPLC. Therefore instant claim 13 is anticipated by or obvious over Kubota et al.

Instant claim 14 recites "The composition of claim 13, where one or more ingredients selected from the group consisting of other non-reducing saccharides, reducing saccharides, sugar alcohols, and minerals are incorporated into  $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose." Broadly interpreted, a composition may include a reaction mixture, the sample for HPLC analysis, or even as the HPLC analyte. Kubota et al. disclose a product formed resulting from the same reaction conditions as disclosed in Experiment 2 of the instant application, see Kubota et al. column 44, lines 25-67, and analysis of that product by HPLC, see column 44, lines 42-50. The reaction mixture of Kubota et al. contains saccharides other than the saccharide-transferred product, such as the saccharides of the starting material. See column 45, note below table 18. Therefore instant claim 14 is anticipated by or obvious over Kubota et al.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 4, 6, 10, and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over as being unpatentable over Maruta et al. (US patent US 6,017,899, cited in PTO-892) in view of Kubota et al. in WIPO publication WO/2001/090338, cited in PTO-892. As this document was published in Japanese, Kubota et al. (US patent US 7,192,746, cited in PTO-892), the US patent issued from the national stage of the PCT application published as WIPO publication WO/2001/090338, is submitted as an English translation of WIPO publication WO/2001/090338. Hereafter citations of Kubota et al. will refer to column and line numbers in US patent US 7,192,746.

Maruta et al. discloses  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose, identified as PI, and  $\alpha$ -maltosyl  $\alpha,\alpha$ -trehalose, identified as PII. See column 19, line 52. Maruta et al. disclose a method of making non-reducing saccharides having a trehalose structure as an end unit using a saccharide-forming enzyme. See column 16, lines 64-67 and column 17, lines 1-5. Further, Maruta et al. teaches enzymatic hydrolysis by glucoamylase to generate  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose and  $\alpha$ -maltosyl  $\alpha,\alpha$ -trehalose. See column 18 lines 57-67 and

Art Unit: 1609

- column 19 lines 37-40. Maruta et al. teaches a saccharide composition comprising trehalose and non-reducing saccharides consisting of one or more glucose molecules bound to one trehalose molecule via the  $\alpha$ -1,4 linkage or the  $\alpha$ -1,6 linkage and a member selected from the group consisting of foodstuffs, cosmetically acceptable materials, and pharmaceutically accepted materials. See claim 1 of Maruta et al. Maruta et al. further specify a food product in claim 8, a cosmetic in claim 9, and a pharmaceutical in claim 10.

Maruta et al. does not teach does not teach 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, 3- $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose (instant claim 3), a method of making 3- $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose using a saccharide-forming enzyme and allowing glucoamylase to act on the reaction mixture (instant claims 6 and 10), or the formation of a product for oral use, food and beverage, cosmetic, or pharmaceutical containing 3- $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose (instant claim 15).

Kubota et al. teaches 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, which is a 3- $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose and a non-reducing saccharides having a trehalose structure as an end unit, and its method of making using a saccharide-transferring enzyme as either anticipated or obvious. See Kubota et al. column 44, lines 25-67.

Maruta et al. discloses  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose, identified as PI, and  $\alpha$ -maltosyl  $\alpha,\alpha$ -trehalose, identified as PII. See column 19, line 52. Maruta et al. does not teach does not teach 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose (instant claim 2) or 3- $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose (instant claim 3).

Kubota et al. teaches 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, a non-reducing saccharide consisting of four glucose units which differs from  $\alpha$ -maltosyl  $\alpha,\alpha$ -trehalose, a non-reducing saccharide consisting of four glucose units, in the position of the  $\alpha$ -glycosidic bonds. See Kubota et al. column 44, lines 42-50. Maruta et al. discloses "a great demand for decreasing or even eliminating the reducing power of reducing partial starch hydrolysates without changing glucose units as a constituent saccharide thereof." See Maruta et al. column 2, lines 43-45. Maruta et al. disclose  $\alpha$ -maltosyl  $\alpha,\alpha$ -trehalose and  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose, a non-reducing saccharide consisting of three glucose units. In view of 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose disclosed by Kubota et al., 3- $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose, a non-reducing saccharide consisting of three glucose units, instant claims 1-3 would have been obvious to one of ordinary skill in the art at the time of invention.

Maruta et al. disclose a method of making non-reducing saccharides having a trehalose structure as an end unit using a saccharide-forming enzyme. See column 16, lines 64-67 and column 17, lines 1-5. Further, Maruta et al. teaches enzymatic hydrolysis by glucoamylase to generate  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose and  $\alpha$ -maltosyl  $\alpha,\alpha$ -trehalose. See column 18 lines 57-67 and column 19 lines 37-40. Maruta et al. does not teach the use of a 3- $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose in this method (instant claims 6 and 10).

Kubota et al. teaches the method of making 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, a 3- $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose, using a saccharide-transferring enzyme as either anticipated or obvious. See Kubota et al. column 44, lines 25-67. It would have been obvious to one

of ordinary skill in the art at the time of invention to apply the teaching of 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose, a 3- $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose, using a saccharide-transferring enzyme by Kubota et al. to the method of method of making non-reducing saccharides having a trehalose structure as an end unit using a saccharide-forming enzyme and enzymatic hydrolysis by glucoamylase to generate  $\alpha$ -glucosyl  $\alpha,\alpha$ -trehalose by Maruta et al. in order to "[eliminate] the reducing power of reducing partial starch hydrolysates without changing glucose units as a constituent saccharide thereof." See Maruta et al., column 2, lines 43-45. Therefore claims 4, 6, and 10 would have been obvious to one of ordinary skill in the art at the time of invention.

Maruta et al. teaches a saccharide composition comprising trehalose and non-reducing saccharides consisting of one or more glucose molecules bound to one trehalose molecule via the  $\alpha$ -1,4 linkage or the  $\alpha$ -1,6 linkage and a member selected from the group consisting of foodstuffs, cosmetically acceptable materials, and pharmaceutically accepted materials. See claim 1 of Maruta et al. Maruta et al. further specify a food product in claim 8, a cosmetic in claim 9, and a pharmaceutical in claim 10. Maruta et al. does not teach a composition of 3- $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose (instant claim 13) where one or more ingredients selected from the group consisting of other non-reducing saccharides, reducing saccharides, sugar alcohols, and minerals are incorporated into  $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose (instant claim 14) or in the form of a product for oral use, food and beverage, cosmetic, or pharmaceutical (instant claim 15).



Art Unit: 1609

Kubota et al. teaches a composition of 3- $\alpha$ -isomaltosyl  $\alpha,\alpha$ -trehalose in the form of a reaction mixture or HPLC sample, which contains saccharides other than the saccharide-transferred product, such as the saccharides of the starting material, as either anticipated or obvious. See Kubota et al. column 44, lines 42-50. Maruta et al. discloses "a great demand for decreasing or even eliminating the reducing power of reducing partial starch hydrolysates without changing glucose units as a constituent saccharide thereof." See Maruta et al. column 2, lines 43-45. It would have been obvious to one of ordinary skill in the art at the time of invention to substitute a non-reducing saccharides consisting of one or more glucose molecules bound to one trehalose molecule via the  $\alpha$ -1,4 linkage or the  $\alpha$ -1,6 linkage of Maruta et al. with a 3- $\alpha$ -glycosyl  $\alpha,\alpha$ -trehalose of the instant application, a non-reducing saccharides consisting of one or more glucose molecules bound to one trehalose molecule via the  $\alpha$ -1,3 linkage. Therefore claims 13, 14, and 15 would have been obvious to one of ordinary skill in the art at the time of invention.

### ***Conclusion***

No claim is found to be allowable.

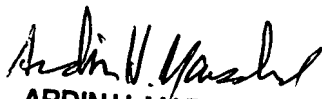
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan S. Lau whose telephone number is 571-270-3531. The examiner can normally be reached on Monday - Thursday, 9 am - 4 pm EST.

Art Unit: 1609

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor supervisors, Ardin Marschel can be reached on 571-272-0718 or Cecilia Tsang can be reached on (571)272-0562. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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JSL

 8/5/07  
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